



**City of Atlanta
Office of Buildings**

CODE INTERPRETATIONS

INTERPRETATION #

2017-IRC-0002

EFFECTIVE DATE:

August 18, 2017

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PAGE #

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CODE INTERPRETATION: Structural Composite Lumber (SCL) and the IRC

1. SCOPE / PURPOSE

- 1.1. This Code Interpretation is meant to establish a consistency of the prescriptive requirements governing structural designs using the 2012 International Residential Code. Specifically, as the structural design relates to the use of Structural Composite Lumber (SCL) versus visually graded dimensional lumber, which is regulated by the span tables within the code.
- 1.2. This binding Code Interpretation is meant to provide consistency between the City of Atlanta Office of Building staff and registered design professionals that provide construction documents to multiple jurisdictions throughout Georgia, and at a national level.
- 1.3. This Code Interpretation is not meant to limit or remove the authority of the Chief Building Official to accept and review alternate methods of design to address the prescriptive requirements of the 2012 International Residential Code.

2. ADOPTED CODE

- 2.1. **2012 International Residential Code Section R201.3 R201.3 Terms defined in other codes.** Where terms are not defined in this code such terms shall have meanings ascribed to them as in other code publications of the International Code Council.
- 2.2. **2012 International Residential Code Section R201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.
- 2.3. **2012 International Residential Code Section R202 (Definitions) CONSTRUCTION DOCUMENTS.** Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit. Construction drawings shall be drawn to an appropriate scale.
- 2.4. **2012 International Residential Code Section R301.1 Application.** Buildings and structures, and all parts thereof, shall be constructed to safely support all loads, including dead loads, live loads, roof loads, flood loads, snow loads, wind loads and seismic loads as prescribed by this code. The



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construction of buildings and structures in accordance with the provisions of this code shall result in a system that provides a complete load path that meets all requirements for the transfer of all loads from their point of origin through the load-resisting elements to the foundation. Buildings and structures constructed as prescribed by this code are deemed to comply with the requirements of this section.

2.5. 2012 International Residential Code Section R301.1.1 Alternative provisions. As an alternative to the requirements in Section R301.1 the following standards are permitted subject to the limitations of this code and the limitations therein. Where engineered design is used in conjunction with these standards, the design shall comply with the International Building Code.

1. AF&PA Wood Frame Construction Manual (WFCM).
2. AISI Standard for Cold-Formed Steel Framing-Prescriptive Method for One- and Two-Family Dwellings (AISI S230).
3. ICC Standard on the Design and Construction of Log Structures (ICC 400).

2.6. 2012 International Residential Code Section R301.1.3 Engineered design. When a building of otherwise conventional construction contains structural elements exceeding the limits of Section R301 or otherwise not conforming to this code, these elements shall be designed in accordance with accepted engineering practice. The extent of such design need only demonstrate compliance of nonconventional elements with other applicable provisions and shall be compatible with the performance of the conventional framed system. Engineered design in accordance with the International Building Code is permitted for all buildings and structures, and parts thereof, included in the scope of this code.

2.7. 2012 International Residential Code Section R502.1.7 or Section R802.1.6 Structural composite lumber. Structural capacities for structural composite lumber shall be established and monitored in accordance with ASTM D 5456.

2.8. AF&PA 2012 edition of Wood Frame Construction Manual (WFCM) Section 2.1.5.3 Design of structural composite lumber shall be in accordance with the NDS.

2.9. ANSI/AWC NDS-2012 National Design Specification (NDS) for Wood Construction Section 8.1.1 Scope. Chapter 8 applies to engineering design with structural composite lumber. Basic procedures and other information provided herein apply only to structural composite lumber conforming to all pertinent provisions of ASTM D5456.



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2.10. ANSI/AWC NDS-2012 National Design Specification (NDS) for Wood Construction Section 8.2 Reference Design Values. Reference design values for structural composite lumber shall be obtained from the structural composite lumber manufacturer's literature or code evaluation report. In special applications where deflection is a critical factor, or where deformation under long-term loading must be limited, the need for use of a reduced modulus of elasticity shall be determined. See Appendix F for provisions on adjusted values for special end use requirements.

2.11. Official Code of Georgia Annotated (O.C.G.A.) §43-15-7(a) It shall be unlawful for any person other than a professional engineer to practice or to offer to practice professional engineering in this state.

3. BACKGROUND

3.1. 2012 International Residential Code Section R201.4 allows for terms to be defined based on common usage. As such, [APA – The Engineered Wood Association](#), provides an industry recognized definition of Structural Composite Lumber, which is as follows:

A family of engineered wood products created by layering dried and graded wood veneers, strands or flakes with moisture resistant adhesive into blocks of material known as billets, which are subsequently resawn into specified sizes. In SCL billets, the grain of each layer of veneer or flakes runs primarily in the same direction.

3.2. Types of Structural Composite Lumber (SCL) identified under this interpretation:

3.2.1. Laminated Veneer Lumber (LVL): Engineered lumber produced by bonding thin wood veneers into a large billet. The grain of all veneers is parallel to the long direction.

3.2.2. Parallel Strand Lumber (PSL): Manufactured from veneers clipped into long strands laid in parallel formation and bonded together with an adhesive to form the finished structural section. The length-to-thickness ratio of the strands in PSL is around 300.

3.2.3. Laminated Strand Lumber (LSL): Structural member comprised of flaked wood strands that have a length-to-thickness ratio of approximately 150. Combined with adhesive, the strands are oriented and formed into a large mat or billet and pressed.



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3.2.4. Oriented Strand Lumber (OSL): Structural member comprised of flaked wood strands with a strand geometry resulting in a length-to-thickness ratio of approximately 75. The strands, when combined with adhesive, are oriented and formed into a large mat or billet and pressed.

3.3. The manufacturing processes for Structural Composite Lumber (SCL) are proprietary and vary widely among product types and from manufacturer to manufacturer.

3.4. Structural Composite Lumber (SCL), as a proprietary engineered wood product does not have span tables or design values represented within the 2012 International Residential Code. The design values for individual SCL's are furnished by the manufacturers, with the individual structural member for a project designed by professional engineer.

4. INTREPRETATION / CLARIFICATION

4.1. The 2012 International Residential Code is a prescriptive based model code, with all the information necessary to build residential structures, within defined perimeters.

4.2. The use of Structural Composite Lumber (SCL), as defined by Section 3 of this document fall outside of the prescriptive design provisions of the 2012 International Residential Code. The use of Structural Composite Lumber (SCL) within a structure designed using the 2012 International Residential Code shall require an engineered design in compliance with the International Building Code. (See Section 2.5, above)

4.3. Within the State of Georgia, only a licensed professional engineer can provide design services. (See Section 2.10, above)

4.4. Construction documents submitted for a project using Structural Composite Lumber (SCL) shall comply with the following:

4.4.1. The entire structural design, or the portion using Structural Composite Lumber (SCL) shall be designed by an engineer that is licensed to practice within the State of Georgia as a professional engineer.

4.4.2. The construction documents shall be sealed by the professional engineer in compliance licensing requirements of the State of Georgia.



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4.4.3. When using Structural Composite Lumber (SCL), the professional engineer shall:

4.4.3.1 Clearly identify the type of Structural Composite Lumber (SCL) being specified, (See Section 3.2, above);

4.4.3.2 The Structural Composite Lumber (SCL) manufacturer;

4.4.3.3 The Structural Composite Lumber (SCL) size, based on the manufacturer's product literature;

4.4.3.4 Identify all hardware used to establish the load path from the point of origin through the load-resisting elements to the foundation. The construction documents shall clearly note the hardware manufacturer and product name and/or number. In addition, it is the responsibility of the professional engineer to verify that the specified hardware is approved for use with the specified Structural Composite Lumber (SCL).

4.4.3.5 The design using Structural Composite Lumber (SCL) shall clearly show and demonstrate the transfer of all loads from their point of origin through the load-resisting elements to the foundation within the construction documents. It shall also indicate all total imposed load, whether concentrated or spread across the selected SCL.

4.4.3.6 The design shall include the design of the foundation system or spread footing necessary to complete the load transfer.

5. SUMMATION

5.1 The 2012 International Residential Code is a prescriptive based code, which allows for construction of residential structures. Within this code, span tables are provided that represent the design values of visually graded lumber for light frame construction; however, for cost considerations, some builders may choose to use Structural Composite Lumber (SCL).

5.2 The 2012 International Residential Code requires that structural elements not conforming to the prescriptive requirements of the code be "designed in accordance with accepted engineering practice". This will require an engineered design, which is prepared by a professional engineer. (See Section 2.5, above)



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- 5.3** In lieu of the prescriptive design requirements of the 2012 International Residential Code, a residential designer or builder may use the AF&PA (American Forest & Paper Association) Wood Frame Construction Manual (WFCM) for structural design. (See Section 2.4, above)
- 5.4** The AF&PA Wood Frame Construction Manual requires that Structural Composite Lumber (SCL) be designed in accordance with the National Design Specification (NDS). (See Section 2.7, above)
- 5.5** The National Design Specification (NDS) requires that Structural Composite Lumber (SCL) requires an engineered design, and fails to offer prescriptive design values for SCL, since these wood products are proprietary. (See Section 2.8 & Section 2.9, above)
- 5.6** Although it is commonly understood that Structural Composite Lumber (SCL) manufacturers have created design software, which is available to professional engineers and lumber retailers. The only party authorized to provide an engineered design for structural elements within the State of Georgia is a licensed professional engineer. (See Section 2.10, above)
- 5.7** Residential construction documents submitted for a permit within the City of Atlanta, which utilize Structural Composite Lumber (SCL) shall be prepared in compliance with Section 4.4, above.